Claims

1. A method for measuring characteristics, especially the temperature of a multi-layer material while the layers are being built up, especially of a semi-conductor layer system during epitaxy under constant processing conditions, wherein the material is illuminated with a illuminating energy, its reflectivity is measured over time and, from this, the position of an extreme value of the Fabry-Perot oscillations of the respective layer is determined, from which the growth rate of the layer and, by means of previously prepared comparison values, the process temperature and/or the composition of the layers are/is determined.

2. The method of claim 1, wherein the extreme value of the first minimum of the Fabry-Perot oscillations is utilized.

3. The method of claims 1 or 2, wherein the actually measured reflectivity is related to the reflectivity of a reference material, on which at least one layer is built up.

4. The method of one of the preceding claims, wherein, at the end of a process step or of the whole process, a layer of the same material as a substrate material, on which at least one layer is built up, is washed and its characteristics are compared with the characteristics present at the start of the process.

5. The method of one of the preceding claims, wherein the material properties are monitored at the same time, at least, however, before the start and after the end of the process by an RAS measurement.

6. The method of one of the preceding claims, wherein the reflectivity at the extreme value of the Fabry-Perot oscillations under consideration is used to determine the process temperature.

7. The method of one of the preceding claims, wherein the process time up to the extreme value of the Fabry-Perot oscillations under consideration is used to determine the growth rate of the layers.

8. The method of one of the preceding claims, wherein, when the process temperature is determined previously, the reflectivity of the extreme value of the Fabry-Perot oscillations of a ternary layer under consideration is used to determine the composition of the layer.

9. The method of one of the preceding claims, wherein the illumination energy is selected in a range, in which the temperature dependence of the real portion of the dielectric function of the participating materials is monotonic.